



Testimony to CT Public Health Committee
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Support for HB 6519 - Requires labeling of foods containing genetically modified material

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Food & Water Watch, a non-profit organization that works to ensure clean water and safe food, urges the Connecticut Public Health Committee to support this bill and pass it out of committee with a strong vote.

Background

Genetically Engineered (GE) crops are created by transferring genetic material from one organism into another to create specific traits, such as resistance to treatment with herbicides or to make a plant produce its own pesticide to repel insects.¹ Unlike traditional plant and animal breeding, which tries to develop better varieties by selecting traits from the same species, genetic engineering techniques can insert specific genes from any plant, animal, or microorganism into the DNA of a different species.

The first GE crops became commercially available in the United States in 1996 and now GE varieties constitute the vast majority of corn, cotton and soybean crops grown in the country. GE varieties make up 88 percent of corn acres, 93 percent of soybean acres and 94 percent of cotton acres planted in the country.² At this point, most GE food crops are genetically engineered to produce a soil bacterium called *Bacillus thuringiensis* (Bt) that repels insects or to allow the crop to withstand treatment with an herbicide, like glyphosate (often sold as Roundup).³

Today the major commercially available GE crops include alfalfa, canola, corn, cotton, papaya, soy, squash, sugar beet, sweet corn.⁴ More recently, biotechnology firms have developed genetically engineered animals, including food animals such as hogs and salmon.⁵ Proponents of the technology contend that these alterations are improvements because they add desirable traits. Yet, companies submit their own safety testing data and independent research on GE foods is limited because biotechnology companies prohibit cultivation for research purposes in the restrictive licensing agreements that control the use of these patented seeds.⁶

The FDA does not require the labeling of GE food products as such because the agency views GE foods as no different than conventional foods. The FDA does permit voluntary GE labeling as long as the information is not false or misleading.⁷ Food manufacturers are allowed to affirmatively label GE food or indicate that the food item does not contain GE ingredients (known as "absence labeling"). But virtually no companies disclose that they are using GE

ingredients under this voluntary scheme. This means that consumers in the United States regularly consume foods that contain GE ingredients without knowing it.⁸

GE Foods Have Uncertain Health Risks

One common refrain from opponents of GE labeling is that giving consumers information on how their food was produced is in conflict with “good science.” The science the food industry likes to talk about is far from complete. Although the FDA contends that there is not sufficient scientific evidence to prove that eating GE foods leads to chronic harm,⁹ the agency’s process for evaluating the safety of these controversial new foods is completely inadequate. Companies submit their own safety testing data, and independent research on GE foods is limited because biotechnology companies prohibit cultivation for research purposes in the restrictive licensing agreements that control the use of these patented seeds.¹⁰

The chronic effects of eating GE foods are still largely unknown. And without labeling of GE foods, we cannot associate any health problems with people who ate them – because we do not know who ate them. Since the Food and Drug Administration (FDA) has no way to track adverse health effects in people consuming GE foods, and because there is no requirement that food containing GE ingredients be labeled,¹¹ there is no effective way to gather data on health problems that may be happening. Because GE foods contain novel genetic combinations that do not occur naturally in our food system, the least that consumers deserve is that they are labeled that way in the grocery store.

GE varieties became the majority of the U.S. corn crop in 2005 and the majority of the U.S. soybean crop in 2000.¹² The potential long-term risks from eating genetically engineered food are unknown. GE corn and soybeans are the building blocks of the industrialized food supply, ending up in products ranging from livestock feed to hydrogenated vegetable oils to high-fructose corn syrup.

Some of the independent, peer-reviewed research that has been done on biotech crops has revealed troubling health implications. A 2009 *International Journal of Biological Sciences* study found that rats that consumed Roundup Ready corn for 90 days developed a deterioration of liver and kidney functioning.¹³ Another study found irregularities in the livers of rats, suggesting higher metabolic rates resulting from a Roundup Ready soybean diet.¹⁴ Research on mouse embryos showed that mice that were fed Roundup Ready soybeans had impaired embryonic development.¹⁵ The most recent rat feeding study done by independent scientists done on 200 rats for two years showed that female rats fed Roundup ready GE corn developed mammary tumors caused by the disruptive effects of Roundup on the female reproductive hormone, estrogen, both male and female rats fed GE feed had severe liver and kidney damage, and the damage was not necessarily dose dependent, 50 percent of males and 70 percent of females died prematurely compared with 30 percent and 20 percent of the control group, and the first detectable tumors occurred 4-7 months into the study showing the need for feeding studies longer than just the biotechnology company standard of 90 days.¹⁶

Even GE livestock feed may have consequences down the line for consumers of animal products. In a study published in 2006, Italian researchers discovered biotech genes in the milk produced from dairy cows fed a GE diet, suggesting the ability of transgenes to survive pasteurization.¹⁷ Meanwhile, a 2012 *Journal of Applied Toxicology* study revealed that Bt toxins present in GE foods might affect human tissue at the cellular level, especially when combined with pesticides associated with GE crops, such as Roundup.¹⁸

Not only are herbicide-resistant crops potentially dangerous to eat, but their production drives the escalating use of agrochemicals. Monsanto's herbicide Roundup is one of 750 U.S. products containing the active ingredient glyphosate, the safety of which has been disputed for years.¹⁹ Glyphosate is a non-selective herbicide used widely in large-scale agriculture, forestry and industrial weed control, and in lawn and garden care.²⁰

Evidence suggests that glyphosate may pose animal and human health risks. Nevertheless, glyphosate use on Roundup Ready crops has grown steadily, with application doubling between 2001 and 2007.²¹ Risks associated with this herbicide include:

- **Cell Toxicity:** Glyphosate exposure causes cell damage and even cell death. A 2009 study published in *Chemical Research in Toxicology* found that glyphosate caused DNA damage to human cells even at lower exposure levels than those recommended by the herbicide's manufacturer.²² An *Environmental and Molecular Mutagenesis* study found that Roundup induced the presence of mutations in mouse kidneys and livers.²³ Additionally, *in vivo* studies on human cells have demonstrated the genetic toxicity of a metabolite of glyphosate, AMPA.²⁴
- **Carcinogenicity:** Inhalation of glyphosate poses a long-term cancer risk for humans, "since cancer may originate from a single cell several years or decades after the initial stress."²⁵ This is supported by research indicating that glyphosate may lead to "genetic instability," which can trigger the onset of cancer.²⁶ Agricultural workers who apply glyphosate to crops have an 80 percent increased risk of developing melanoma, according to studies.²⁷
- **Neurotoxicity:** Glyphosate exposure can impair the nervous system as well. A 2002 *Environmental Health Perspectives* study showed a significant correlation between glyphosate and adverse neurodevelopmental effects.²⁸ One man who sustained acute glyphosate exposure developed symptoms of Parkinson's disease only 30 days after the accident, possibly due to the neurotoxicity of the herbicide.²⁹
- **Endocrine Disruption:** Several studies link Roundup with endocrine disruption. A 2010 study published in *Chemical Research in Toxicology* found that glyphosate-based herbicides caused highly abnormal deformities and neurological problems in vertebrates.³⁰ In a 2012 feeding study, 70 to 80 percent of rats treated with trace Roundup levels in their water had 1.4-2.4 times more abnormalities in their pituitary glands than the controls.³¹ The pituitary gland is a vital hormone-producing part of the brain responsible for controlling signals for growth, metabolism, stress and fertility. A Texas Tech University study showed that Roundup inhibited mouse steroid production.³² Further research has shown that Roundup also has a negative impact during fetal development in rats and on human embryonic cells.³³ Another study showed that glyphosate concentrations 100 times lower than their recommended agricultural use disrupted endocrine enzymes in human placental cells.³⁴

GE Crops Speed Up the Chemical Treadmill

Ubiquitous application of Roundup has spawned glyphosate-resistant weeds, a problem that is driving farmers to apply more toxic herbicides, like 2,4-D and Dicamba and to reduce conservation tilling, according to a 2010 National Research Council report.³⁵ At least 20 weed species worldwide are resistant to glyphosate, including aggressive weeds like ragweed, pigweed and waterhemp.³⁶ This resistance can be transferred by pollen, which helps explain the rapid distribution of these weeds.³⁷ Already, 12 million acres in the United States are infested

with “superweeds,” and even biotech company Syngenta predicts that glyphosate-resistant weeds will infest one-fourth of U.S. cropland by 2013.³⁸

Agricultural experts warn that these superweeds can lower farm yields, increase pollution and raise costs for farmers.³⁹ In 2009, farmers in Georgia were forced to weed half of the state’s 1 million acres of cotton due to the spread of pigweed, costing a total of \$11 million.⁴⁰ To deal with this spreading problem, biotechnology companies are creating crops that are resistant to a variety of more-toxic chemicals, including 2,4-D (an Agent Orange component) and dicamba.⁴¹ Not only can 2,4-D drift easily onto neighboring fields and wreak havoc on produce, but it also has associated health risks including endocrine disruption and developmental abnormalities.⁴² Rats exposed to 2,4-D exhibited depressed thyroid hormone levels, which can affect normal metabolism and brain functioning.⁴³ Studies found that men who applied 2,4-D had lower sperm counts and more sperm abnormalities than those not exposed to the herbicide.⁴⁴

To help manage weeds and allow farmers to apply 2,4-D generously to crops, Dow AgroSciences has engineered 2,4-D-resistant corn and soybeans. This crop could be dangerous to eat because a metabolite of 2,4-D is known to cause skin sores, liver damage and sometimes death in animals.⁴⁵ Scientists from the French National Institute for Agricultural Research suggest that, “following 2,4-D treatment, 2,4-D tolerant plants may not be acceptable for human consumption.”⁴⁶

Penn State University weed scientist Dave Mortenson suggests that efforts to control newly resistant weeds could increase pesticide use 70 percent by 2015.⁴⁷ As mixtures of herbicides are used on crops, some weeds are developing multiple resistance to several chemicals with different modes of action. This occurrence could eventually make soybean production an unviable option in parts of the Midwest.⁴⁸ And as glyphosate-resistant weeds strangle cropland, farmers have returned to deep tilling for weed management, abandoning tillage practices designed to slow soil erosion.⁴⁹

GE Crops Hurt Farmers

With the rise of GE crops, coexistence between organic, non-GE and GE production has become more difficult due to the potential for gene flow and commingling of crops at both the planting and harvesting levels. In official government jargon, this mixing is referred to as “adventitious presence,” but what it means is that GE crops can contaminate non-GE and organic crops through cross-pollination on the field or through seed or grain mixing after harvest.⁵⁰ Not only does GE contamination affect seed purity, but it also has serious ramifications for organic and non-GE farmers that face economic harm due to lost markets or decreased crop values.

The financial burden associated with GE contamination is significant. Some of the costs to non-GE and organic farmers include the loss of market access, risks to long-term investments associated with the crop or one type of production, and the expense of putting in place preventative measures to avoid contamination. Preventative measures include creating buffer zones around fields, which can result in reduced crop yield; record-keeping; testing and surveillance of a crop; and segregation, maintenance and cleaning during all steps of the supply chain.

Additionally, consumers who are interested in buying non-GE foods know that they can rely on organic and non-GE labeled food products, but the threat of contamination reduces the confidence that consumers have in those products. The undermining of consumer confidence is yet another cost of contamination — or even of just the threat of contamination.

Farmers who intentionally grow GE crops are not required to plant non-GE buffer zones to prevent contamination unless this is stipulated in the farm's permit from the U.S. Department of Agriculture (USDA).⁵¹ Yet even the use of buffer zones has proven ineffective because these areas are usually not large enough to prevent contamination.⁵²

Data gathered by the Organic Trade Association illustrates that some grain buyers reject loads of crops that have a more than 0.9 percent GE presence, resulting in 0.25 percent of non-GE soybean loads and 3.5 percent of non-GE corn loads being rejected. A rejection by the load's intended buyer means a lost premium for that non-GE product. The estimated loss from market rejections alone is \$40 million annually.⁵³

Organic dairy farmers already face difficulty securing organic feed, and this challenge will only worsen if GE alfalfa begins to contaminate organic alfalfa.⁵⁴ The USDA's approval of Roundup Ready alfalfa in 2010 highlights the significant ramifications that contamination can have for organic producers. Alfalfa is the most important feed crop for dairy cows.⁵⁵ Organic dairy farmers receive a price premium for their milk, but they also have production costs of \$5 to \$7 more per hundred pounds of milk — 38 percent higher than for conventional dairies.⁵⁶ If GE contamination eliminates this premium, which is mostly eaten up by higher organic production costs, these farms could be unprofitable.

Growers of non-GE and organic sugar beets and related crops — like table beets and chard — also face the possibility of contamination from nearby Roundup Ready sugar beet growers, as well as the potential economic effects associated with a tainted harvest.⁵⁷ Over 50 percent of U.S. sugar beet seed production occurs in Oregon's Willamette Valley, also home to about half of the country's swiss chard seed production.⁵⁸ The Willamette Valley Specialty Seed Association requires that GE plants remain three miles from non-GE chard and beet seed producers, yet sugar beet pollen has been known to travel as far as five miles.⁵⁹

If contaminated, farmers producing non-GE and organic crops can also lose access to international markets. Many other countries have stricter GE regulations and labeling requirements than the United States. Despite the advanced U.S. grain-handling system, GE grains have contaminated non-GE shipments and devastated U.S. exports.

The Government Accountability Office identified six known unauthorized releases of GE crops between 2000 and 2008.⁶⁰ In 2000, Japan discovered GE StarLink corn, which was not approved for human food, in 70 percent of tested samples, even though StarLink represented under one percent of U.S. corn cultivation.⁶¹ After the StarLink discovery, the European Union banned all U.S. corn imports, costing U.S. farmers \$300 million.⁶² In August 2006, unapproved GE Liberty Link rice was found to have contaminated conventional rice stocks.⁶³ Japan halted all U.S. rice imports and the EU imposed heavy restrictions, costing the U.S. rice industry \$1.2 billion.⁶⁴

Besides the threat of economic harm from contamination, farmers who unintentionally grow patented GE seeds or who harvest crops that are cross-pollinated with GE traits could face costly lawsuits by biotechnology firms for "seed piracy." By 2007, Monsanto had filed 112 lawsuits against U.S. farmers for patent infringement, recovering between \$85.7 and \$160.6 million.⁶⁵ At least one farmer contends that he was sued when his canola fields were contaminated with GE crops from neighboring farms.⁶⁶

We Have a Right to Know

When it comes to labeling genetically engineered (GE) foods, the United States lags behind nearly 50 developed nations, including all European Union member states, Australia, Brazil, China, Japan, Korea, New Zealand, Russia and Saudi Arabia.⁶⁷ The European Union requires all food, animal feeds, and processed products with biotech content to bear GE labels.⁶⁸ However, the U.S. Food and Drug Administration (FDA) does not require the labeling of GE food products because the agency's policy is that GE foods are not different from conventional foods.

Although GE crop varieties now constitute the vast majority of corn, cotton, and soybean production,⁶⁹ about half of consumers realize that GE foods are widely available in supermarkets,⁷⁰ especially as ingredients in processed foods. This indicates that the majority of Americans regularly consume foods containing GE ingredients without knowing it.

Most consumers believe they have a right to know what they are eating and to get enough information to make informed choices about the food they purchase. That is why the overwhelming majority of Americans say they are in favor of mandatory GE labeling of food products. An ABC News poll conducted in 2001 found that 93 percent of Americans believe the federal government should require manufacturers to label GE foods.⁷¹ A 2008 CBS/*New York Times* poll found that more than half of American consumers would not likely choose to buy GE foods, and 87 percent wanted all GE ingredients to be labeled.⁷² A 2010 Thompson Reuters survey of consumers also found 93 percent in support of GE labeling.⁷³ 91 percent of voters polled in a 2012 Mellman Group study favor the FDA requiring labels on GE foods or foods containing GE ingredients, and of those, 81 percent "strongly favor" the labeling proposal.⁷⁴

Some may claim that it is not the responsibility of the states to create food labeling requirements, however states often lead the way when the federal government is too slow, too gridlocked, or too weak to take action. Long before the United States enacted a mandatory Country of Origin Label (COOL) policy, eight states required this labeling on their own.⁷⁵ Some states have also led the way on enacting renewable energy standards and mandates, as funding for federal initiatives has declined.⁷⁶ California has been building its renewable energy program since 1998, and by 2009, 12 percent of the state's electricity came from renewable energy sources, almost three times the national percentage of renewable energy use.⁷⁷ It is more than reasonable that states are once again taking the lead on the issue of labeling GE food, where the federal government has failed to do its job.

GE Labeling Will Not Raise Food Costs

Opponents of some labeling proposals claim that mandatory GE food labeling would increase food costs for families.⁷⁸ These kinds of claims are often based on analyses done by labeling opponents in the food industry and are far from objective examinations of the facts.

Yet a look at the literature on mandatory food labeling reveals a much lower cost is likely. An impartial consulting firm did a study in 2001 for the UK Food Standards Agency and found GE labeling would only increase a household's annual food spending by 0.01 to 0.17 percent—a very small figure ranging from an increase of \$.33 to \$5.58 in 2010 real U.S. dollars, inflation-adjusted, annually.⁷⁹

It is worth looking at some of the costs that could be incurred with mandatory labeling. Labeling would require segregating seeds according to GE content throughout the food chain, which is already done with many identity-preserved crops. Farmers are already segregating crops to prevent cross-contamination on fields, although some cases of GE contamination do still occur. Labeling requirements would not necessarily require farmers to incur any extra costs while

keeping seeds separated at the field level.⁸⁰ Depending on the markets where the seeds or grains are sold, grain handlers and seed companies do testing to ensure the purity of the seeds that they sell or distribute. There are already segregation methods in place today for crop and seed export to countries with GE labeling requirements, like European Union countries, Japan and China.⁸¹ Once labeling is required in the United States, these practices would have to be expanded, but it is not an entirely new system that has to be developed.

Food processors and manufacturers would have to make sure there was proper segregation in crop storage and cleaning of equipment,⁸² but as long as labeling is maintained throughout the process this should be straightforward. Manufacturers can reduce the costs of actually changing their labels by waiting until their inventory of labels is low and making the change before reordering packaging materials, or coordinating the required labeling change with a scheduled labeling change. According to an FDA Labeling Cost Model, “the pricing for graphic design services does not differ substantially if additional changes are made because of a regulatory requirement at the same time as a scheduled label change.”⁸³

GE labeling would not mean more bureaucracy and taxpayer costs. For decades, the food industry has opposed any new food labeling requirements, including nutrition labels and ingredient listings. One of their favorite arguments is that new labeling requirements will drive the growth of government bureaucracy and cost taxpayers money.⁸⁴ Mandatory labeling would take monitoring and enforcement, but this does not have to be difficult as long as all players participated in labeling along all steps of the food chain. If GE labeling is mandatory, federal and state agencies could simply add GE labeling to the food labeling requirements that they would already be assessing during compliance inspections.

GE labeling would not leave grocers and retailers with mountains of paperwork. Changing food labeling to reflect the presence of a GE ingredient wouldn’t be any different for grocery stores than stocking a product that has changed its ingredients or added a nutritional benefit claim to the package. At the retail level, the costs for pre-packaged foods will be very small, because the labels will have been added long before the food gets to the store. For foods that the store handles (like produce that is repackaged on site), retailers will have to be sure that GE and non-GE products are kept separately and labeled as such, not unlike what they do to provide country of origin information or even pricing information. The bulk of the labeling costs will be incurred at the processing and manufacturing stage, with grocery stores having small additional costs.⁸⁵

We currently have a right to know how much fat and sodium are in our food, and a full list of ingredients is available on nearly every box of food sold in stores. But we *don’t* know if the foods we are eating are genetically engineered, despite the risks these foods pose to public health, farmers and the environment.

We urge members of the legislature to help protect public health by passing this legislation and supporting our right to know if we are eating genetically engineered foods.

Thank you for your time and consideration.

Sincerely,

Nisha Swinton

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